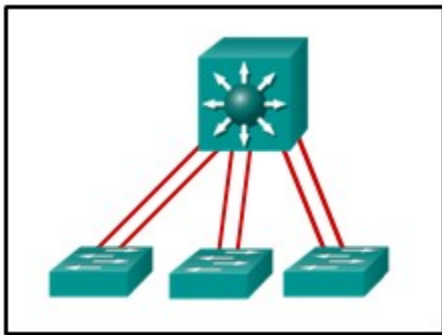


CCNA 2 v7 Modules 5 - 6: Redundant Networks Exam Answers

Question 1

34. Refer to the exhibit. Which switching technology would allow each access layer switch link to be aggregated to provide more bandwidth between each Layer 2 switch and the Layer 3 switch?



- trunking
- HSRP
- PortFast
- **EtherChannel**

Explanation: PortFast is used to reduce the amount of time that a port spends going through the spanning-tree algorithm, so that devices can start sending data sooner. Trunking can be implemented in conjunction with EtherChannel, but trunking alone does not aggregate switch links. HSRP is used to load-balance traffic across two different connections to Layer 3 devices for default gateway redundancy. HSRP does not aggregate links at either Layer 2 or Layer 3 as EtherChannel does.

Question 2

36. Open the PT Activity. Perform the tasks in the activity instructions and then answer the question.

Which set of configuration commands issued on SW1 will successfully complete the EtherChannel link between SW1 and SW2?



PT Activity: 00:01:00

Interface GigabitEthernet0/1 on SW1 is connected to interface GigabitEthernet0/1 on SW2, and Interface GigabitEthernet0/2 on SW1 is connected to interface GigabitEthernet0/2 on SW2. EtherChannel is correctly configured on SW2 interfaces GigabitEthernet0/1 and GigabitEthernet0/2. Open the Terminal application on PC1 to access switch SW1 and examine the configuration of SW1.

Which set of configuration commands issued on SW1 will successfully complete the EtherChannel link between SW1 and SW2?

Return to the assessment to answer the question.

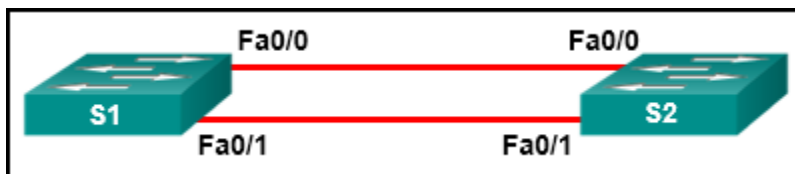
- interface GigabitEthernet0/1
no shutdown
- interface Port-channel 1
no shutdown
- interface GigabitEthernet0/2
channel-group 2 mode desirable
- **interface GigabitEthernet0/1
channel-group 1 mode desirable**

Explanation: Issuing the show running-configuration command on SW1 shows that interface GigabitEthernet0/1 is missing the channel-group 1 mode desirable command which will complete the EtherChannel configuration for

interface GigabitEthernet0/1 and interface GigabitEthernet0/2.

Question 3

35. Refer to the exhibit. An administrator wants to form an EtherChannel between the two switches by using the Port Aggregation Protocol. If switch S1 is configured to be in auto mode, which mode should be configured on S2 to form the EtherChannel?

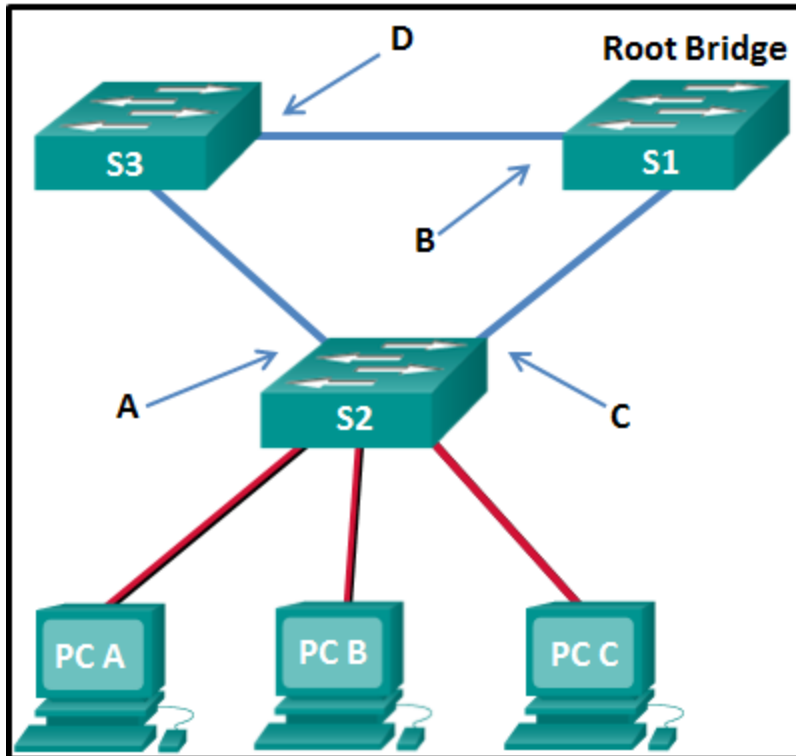


- auto
- on
- off
- **desirable**

Explanation: An EtherChannel will be formed via PAgP when both switches are in on mode or when one of them is in auto or desirable mode and the other is in desirable mode.

Question 4

33. Refer to the exhibit. What are the possible port roles for ports A, B, C, and D in this RSTP-enabled network?



- **alternate, designated, root, root**
- designated, alternate, root, root
- alternate, root, designated, root
- designated, root, alternate, root

Explanation: Because S1 is the root bridge, B is a designated port, and C and D root ports. RSTP supports a new port type, alternate port in discarding state, that can be port A in this scenario.

Question 5

6. Match the STP protocol with the correct description. (Not all options are used.)

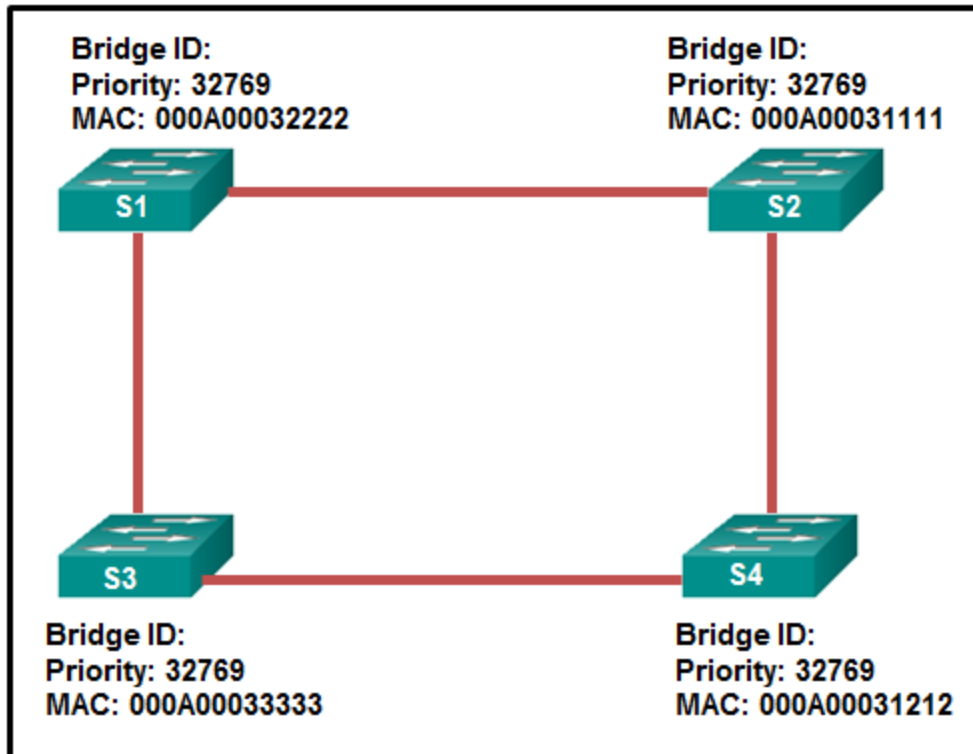
MSTP -- A protocol that allows multiple VLANs to run in a single spanning-tree instance

STP -- The legacy standard for STP that runs all VLANs in a single spanning-tree instance

Rapid PVST+ -- A Cisco enhancement of RSTP to provide a spanning-tree instance for each VLAN

Question 6

16. Refer to the exhibit. Which switch will be the root bridge after the election process is complete?



- S1
- **S2**
- S3
- S4

Explanation: The root bridge is determined by the lowest bridge ID, which consists of the priority value and the MAC address. Because the priority values of all of the switches are identical, the MAC address is used to determine the root bridge. Because S2 has the lowest MAC address, S2 becomes the root bridge.

Question 7

54. What is the outcome of a Layer 2 broadcast storm?

- Routers will take over the forwarding of frames as switches become congested.
- **New traffic is discarded by the switch because it is unable to be processed.**
- CSMA/CD will cause each host to continue transmitting frames.
- ARP broadcast requests are returned to the transmitting host.

Explanation: When the network is saturated with broadcast traffic that is looping between switches, new traffic is discarded by each switch because it is unable to be processed.

Question 8

11. What is the function of STP in a scalable network?

- It decreases the size of the failure domain to contain the impact of failures.
- It protects the edge of the enterprise network from malicious activity.
- It combines multiple switch trunk links to act as one logical link for increased bandwidth.
- It disables redundant paths to eliminate Layer 2 loops.

Explanation: STP is an important component in a scalable network because it allows redundant physical connections between Layer 2 devices to be implemented without creating Layer 2 loops. STP prevents Layer 2 loops from forming by disabling interfaces on Layer 2 devices when they would create a loop.

Question 9

9. Match the spanning-tree feature with the protocol type. (Not all options are used.)

Place the options in the following order:

PVST	Cisco implementation of IEEE 802.1D
RSTP	Fast converging enhancement of IEEE 802.1D
MSTP	IEEE standard that reduces the number of STP instances
MST	Proprietary per VLAN implementation of IEEE 802.1w
Rapid PVST+	an evolution of STP that provides faster convergence

Question 10

53. Which protocol provides up to 16 instances of RSTP, combines many VLANs with the same physical and logical topology into a common RSTP instance, and provides support for PortFast, BPDU guard, BPDU filter, root guard, and loop guard?

- STP
- Rapid PVST+
- PVST+
- **MST**

Explanation: MST is the Cisco implementation of MSTP, an IEEE standard protocol that provides up to 16 instances of RSTP and combines many VLANs with the same physical and logical topology into a common RSTP instance. Each instance supports PortFast, BPDU guard, BPDU filter, root guard, and loop guard. STP and RSTP assume only one spanning-tree instance for the entire bridged network, regardless of the number of VLANs. PVST+ provides a separate 802.1D spanning-tree instance for each VLAN that is configured in the network.

Question 11

37. A set of switches is being connected in a LAN topology. Which STP bridge priority value will make it least likely for the switch to be selected as the root?

- 65535
- 4096
- 32768
- **61440**

Explanation: The STP bridge priority is a two byte number, but it can only be customized in increments of 4096. The smaller number is preferred, but the largest usable priority value is 61440.

Question 12

14. What is the purpose of the Spanning Tree Protocol (STP)?

- creates smaller collision domains
- prevents routing loops on a router
- **prevents Layer 2 loops**
- allows Cisco devices to exchange routing table updates
- creates smaller broadcast domains

Explanation: The Spanning-Tree Protocol (STP) creates one path through a switch network in order to prevent Layer 2 loops.

Question 13

8. If no bridge priority is configured in PVST, which criteria is considered when electing the root bridge?

- **lowest MAC address**
- lowest IP address
- highest IP address

- highest MAC address

Explanation: Only one switch can be the root bridge for a VLAN. The root bridge is the switch with the lowest BID. The BID is determined by priority and the MAC address. If no priority is configured then all switches use the default priority and the election of the root bridge will be based on the lowest MAC address.

Question 14

10. When the show spanning-tree vlan 33 command is issued on a switch, three ports are shown in the forwarding state. In which two port roles could these interfaces function while in the forwarding state? (Choose two.)

- alternate
- **designated**
- disabled
- blocked
- **root**

Explanation: The role of each of the three ports will be either designated port or root port. Ports in the disabled state are administratively disabled. Ports in the blocking state are alternate ports.

Question 15

5. Which three components are combined to form a bridge ID?

- **extended system ID**
- cost
- IP address
- **bridge priority**
- **MAC address**

- port ID

Explanation: The three components that are combined to form a bridge ID are bridge priority, extended system ID, and MAC address.

Question 16

13. Which spanning tree standard supports only one root bridge so that traffic from all VLANs flows over the same path?

- PVST+
- **802.1D**
- MST
- Rapid PVST

Explanation: MST is the Cisco implementation of MSTP, an IEEE standard protocol that provides up to 16 instances of RSTP. PVST+ provides a separate 802.1D spanning-tree instance for each VLAN that is configured in the network. 802.1D is the original STP standard defined by the IEEE and allows for only one root bridge for all VLANs. 802.1w, or RSTP, provides faster convergence but still uses only one STP instance for all VLANs.

Question 17

12. What is a characteristic of spanning tree?

- **It is enabled by default on Cisco switches.**
- It is used to discover information about an adjacent Cisco device.
- It has a TTL mechanism that works at Layer 2.
- It prevents propagation of Layer 2 broadcast frames.

Explanation: Spanning tree does work at Layer 2 on Ethernet-based networks and is enabled by default, but it does not have a TTL mechanism. Spanning tree exists because Layer 2 frames do not have a TTL mechanism. Layer 2 frames are still broadcast when spanning tree is enabled, but the frames can only be transmitted through a single path through the Layer 2 network that was created by spanning tree. Cisco Discovery Protocol (CDP) is used to discover information about an adjacent Cisco device.

Question 18

15. What is the value used to determine which port on a non-root bridge will become a root port in a STP network?

- **the path cost**
- the highest MAC address of all the ports in the switch
- the lowest MAC address of all the ports in the switch
- the VTP revision number

Explanation: STP establishes one root port on each non-root bridge. The root port is the lowest-cost path from the non-root bridge to the root bridge, indicating the direction of the best path to the root bridge. This is primarily based on the path cost to the root bridge.

Question 19

29. What is a requirement to configure a trunking EtherChannel between two switches?

- **The allowed range of VLANs must be the same on both switches.**
- The participating interfaces must be assigned the same VLAN number on both switches.
- The participating interfaces must be physically contiguous on a switch.

- The participating interfaces must be on the same module on a switch.

Explanation: To enable a trunking EtherChannel successfully, the range of VLANs allowed on all the interfaces must match; otherwise, the EtherChannel cannot be formed. The interfaces involved in an EtherChannel do not have to be physically contiguous, or on the same module. Because the EtherChannel is a trunking one, participating interfaces are configured as trunk mode, not access mode.

Question 20

27. A network administrator is configuring an EtherChannel link between switches SW1 and SW2 by using the command SW1(config-if-range)# channel-group 1 mode auto. Which command must be used on SW2 to enable this EtherChannel?

- SW2(config-if-range)# channel-group 1 mode passive
- **SW2(config-if-range)# channel-group 1 mode desirable**
- SW2(config-if-range)# channel-group 1 mode on
- SW2(config-if-range)# channel-group 1 mode active

Explanation: The possible combinations to establish an EtherChannel between SW1 and SW2 using LACP or PAgP are as follows:

PAgP
 on on
 auto desirable
 desirable desirable

LACP
 on on
 active active
 passive active

The EtherChannel mode chosen on each side of the EtherChannel must be compatible in order to enable it.

Question 21

20. Which statement is true regarding the use of PAgP to create EtherChannels?

- It requires full duplex.
- It increases the number of ports that are participating in spanning tree.
- It requires more physical links than LACP does.
- It mandates that an even number of ports (2, 4, 6, etc.) be used for aggregation.
- **It is Cisco proprietary.**

Explanation: PAgP is used to automatically aggregate multiple ports into an EtherChannel bundle, but it only works between Cisco devices. LACP can be used for the same purpose between Cisco and non-Cisco devices. PAgP must have the same duplex mode at both ends and can use two ports or more. The number of ports depends on the switch platform or module. An EtherChannel aggregated link is seen as one port by the spanning-tree algorithm.

Question 22

51. When EtherChannel is configured, which mode will force an interface into a port channel without exchanging aggregation protocol packets?

- active
- auto
- **on**
- desirable

Explanation: For both LACP and PAgP, the “on” mode will force an interface into an EtherChannel without exchanging protocol packets.

Question 23

45. Which statement describes an EtherChannel implementation?

- EtherChannel operates only at Layer 2.
- PAgP cannot be used in conjunction with EtherChannel.
- **A trunked port can be part of an EtherChannel bundle.**
- EtherChannel can support up to a maximum of ten separate links.

Explanation: Up to 16 links can be grouped in an EtherChannel by using the the PAgP or LACP protocol. EtherChannel can be configured as a Layer 2 bundle or a Layer 3 bundle. Configuring a Layer 3 bundle is beyond the scope of this course. If a trunked port is a part of the EtherChannel bundle, all ports in the bundle need to be trunk ports and the native VLAN must be the same on all of these ports. A best practice is to apply the configuration to the port channel interface. The configuration is then automatically applied to the individual ports.

Question 24

32. What are two advantages of EtherChannel? (Choose two.)

- **Spanning Tree Protocol views the physical links in an EtherChannel as one logical connection.**
- Load balancing occurs between links configured as different EtherChannels.

- **Configuring the EtherChannel interface provides consistency in the configuration of the physical links.**
- Spanning Tree Protocol ensures redundancy by transitioning failed interfaces in an EtherChannel to a forwarding state.
- EtherChannel uses upgraded physical links to provide increased bandwidth.

Explanation: EtherChannel configuration of one logical interface ensures configuration consistency across the physical links in the EtherChannel. The EtherChannel provides increased bandwidth using existing switch ports without requiring any upgrades to the physical interfaces. Load balancing methods are implemented between links that are part of the same Etherchannel. Because EtherChannel views the bundled physical links as one logical connection, spanning tree recalculation is not required if one of the bundled physical links fail. If a physical interface fails, STP cannot transition the failed interface into a forwarding state.

Question 25

47. Which statement describes a characteristic of EtherChannel?

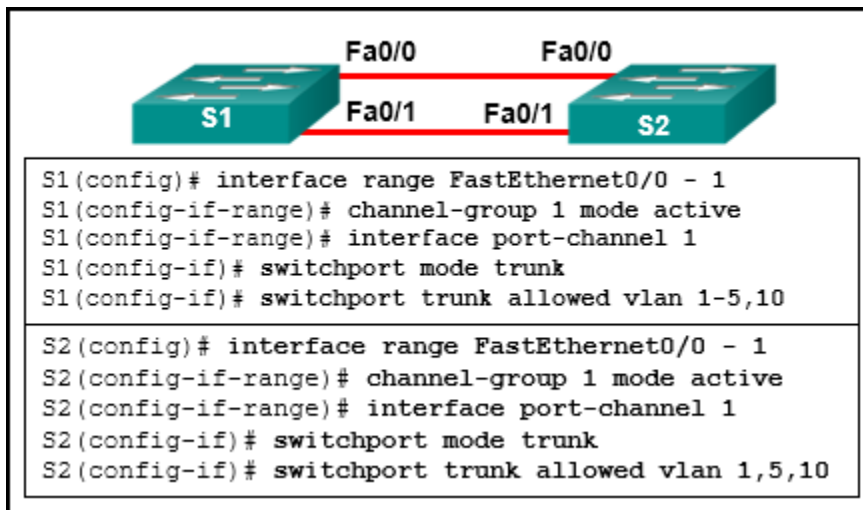
- It can combine up to a maximum of 4 physical links.
- It can bundle mixed types of 100 Mb/s and 1Gb/s Ethernet links.
- It consists of multiple parallel links between a switch and a router.
- **It is made by combining multiple physical links that are seen as one link between two switches.**

Explanation: An EtherChannel is formed by combining multiple (same type) Ethernet physical links so they are seen and configured as one logical link. It provides an aggregated link between two switches. Currently each

EtherChannel can consist of up to eight compatibly configured Ethernet ports.

Question 26

50. Refer to the exhibit. An EtherChannel was configured between switches S1 and S2, but the interfaces do not form an EtherChannel. What is the problem?



- The interface port-channel number has to be different on each switch.
- The switch ports were not configured with speed and duplex mode.
- The switch ports have to be configured as access ports with each port having a VLAN assigned.
- **The EtherChannel was not configured with the same allowed range of VLANs on each interface.**

Explanation: ?

Question 27

49. Which mode configuration setting would allow formation of an EtherChannel link between switches SW1 and SW2 without sending negotiation traffic?

- **SW1: on**
SW2: on
- SW1: desirable
SW2: desirable
- SW1: auto
- SW2: auto
trunking enabled on both switches
- SW1: auto
- SW2: auto
PortFast enabled on both switches
- SW1: passive
SW2: active

Explanation: The auto channel-group keyword enables PAgP only if a PAgP device is detected on the opposite side of the link. If the auto keyword is used, the only way to form an EtherChannel link is if the opposite connected device is configured with the desirable keyword. PortFast and trunking technologies are irrelevant to forming an EtherChannel link. Even though an EtherChannel can be formed if both sides are configured in desirable mode, PAgP is active and PAgP messages are being sent constantly across the link, decreasing the amount of bandwidth available for user traffic.

Question 28

26. A network administrator configured an EtherChannel link with three interfaces between two switches. What is the result if one of the three interfaces is down?

- **The remaining two interfaces continue to load balance traffic.**
- The remaining two interfaces become separate links between the two switches.
- One interface becomes an active link for data traffic and the other becomes a backup link.
- The EtherChannel fails.

Explanation: EtherChannel creates an aggregation that is seen as one logical link. It provides redundancy because the overall link is one logical connection. The loss of one physical link within the channel does not create a change in the topology; the EtherChannel remains functional.

Question 29

22. Refer to the exhibit. On the basis of the output that is shown, what can be determined about the EtherChannel bundle?

```

S_ATC_1.1# show etherchannel summary
Flags:  D - down          P - in port-channel
        I - stand-alone  s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

Number of channel-groups in use: 1
Number of aggregators:           1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1(SU)                PAgP      Fa0/1(P) Fa0/2(P)

```

- The EtherChannel bundle is down.
- Two Gigabit Ethernet ports are used to form the EtherChannel.

- **A Cisco proprietary protocol was used to negotiate the EtherChannel link.**
- The EtherChannel bundle is operating at both Layer 2 and Layer 3.

Explanation: Two protocols can be used to send negotiation frames that are used to try to establish an EtherChannel link: PAgP and LACP. PAgP is Cisco proprietary, and LACP adheres to the industry standard.

Question 30

52. What are two load-balancing methods in the EtherChannel technology? (Choose two.)

- combination of source port and IP to destination port and IP
- **source IP to destination IP**
- source port to destination port
- combination of source MAC and IP to destination MAC and IP
- **source MAC to destination MAC**

Explanation: Depending on the hardware platform, one or more load-balancing methods can be implemented. These methods include source MAC to destination MAC load balancing or source IP to destination IP load balancing, across the physical links.

Question 31

21. What are two requirements to be able to configure an EtherChannel between two switches? (Choose two.)

- **All the interfaces need to work at the same speed.**
- All interfaces need to be assigned to different VLANs.
- Different allowed ranges of VLANs must exist on each end.

- **All the interfaces need to be working in the same duplex mode.**
- The interfaces that are involved need to be contiguous on the switch.

Explanation: All interfaces in the EtherChannel bundle must be assigned to the same VLAN or be configured as a trunk. If the allowed range of VLANs is not the same, the interfaces do not form an EtherChannel even when set to auto or desirable mode.

!!! Explanation doesn't match the answers. What is the right explanation?

Question 32

44. A switch is configured to run STP. What term describes a field that has a default value of 32,768 and is the initial deciding factor when electing a root bridge?

- **bridge priority**
- MAC Address
- extended system ID
- bridge ID

Explanation: ?

100%

You have scored 100%.

Congratulations, you have passed the exam.

You have used 1 of 1 attempt(s).

[Review Assessment](#)

Here is how you performed in each of the Learning Objectives and Skills associated with this assessment.

Switching. Redundancy. STP

100%

Switching. Etherchannel. Implementation

100%